Uranium/Thorium Deposits of the Northeastern United States

Northeast Atomic Minerals
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YouTube www.youtube.com/user/DangerousLabs/videos

XRF Analysis Service

Ag, As, Au, Bi, Cd, Cr, Co, Cu, Fe, Hg, Mn, Mo, Ni, Pb,
Pt, Rb, Sb, Se, Sn, Sr, Ti, U, V, Zn, Zr

ON THE LEACHING BEHAVIOR OF URANIUM-BEARING RESOURCES IN CARBONATE- BICARBONATE SOLUTION BY GASEOUS OXIDANTS

Experiment I.D. and Leaching Configuration	Recovery for 48-hours Leach
Todilto Limestone 100 cc/m Air Minus 8 mesh (2000 µm and smaller)	41.0%
Todilto Limestone 100 cc/m O_3 (2.03 v% ozone) Minus 8 mesh (2000 µm and smaller)	46.9%
Todilto Limestone 100 cc/m O_3 (7.97 v% ozone) Minus 8 mesh (2000 µm and smaller)	51.3%
Todilto Limestone 100 cc/m O_3 (7.97 v% ozone) Minus 100 mesh (149 µm and smaller)	74.4%

Leaching Solution: 40 grams per liter Na_2CO_3 and 15 grams per liter $NaHCO_3$

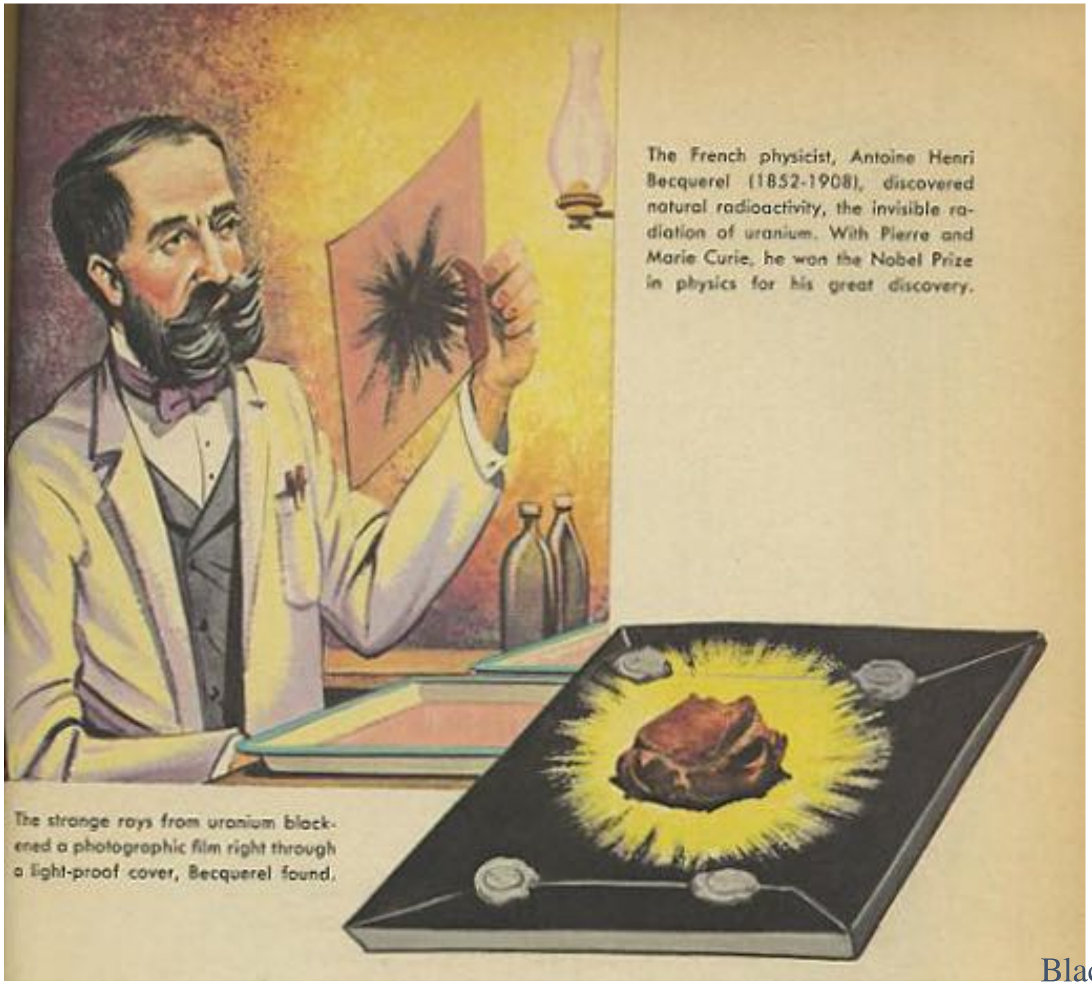
Oxidation Potential vs. Standard Hydrogen Electrode

Oxidant	Electrochemical Potential I (Volts)
Free Radical, (-OH)	2.8
Ozone atom (O)	2.42
Ozone, (O3)	2.07
Hydrogen Peroxide, (H2O2)	1.78
Potassium Permanganate, (KMnO4)	1.7
Chlorine Dioxide, (ClO2)	1.57
Chlorine gas, (Cl2)	1.36
Oxygen, (O2)	1.23
Bromine	1.09
Hypochlorous Acid, (HOCl)	0.95
Sodium Hypochlorite, (NaOCl)	0.94
Iodine	0.54

What Is Radioactivity?

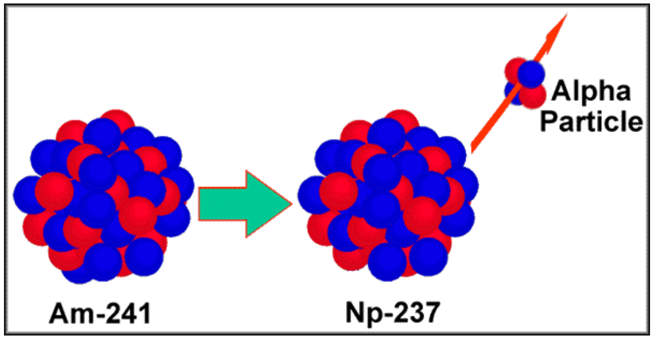
- Spontaneous Emission of Ionizing Radiation
- Ionization = Removal of Electrons
- Most Common Types: Alpha, Beta, Gamma, X
- Alpha = Helium Nucleus (2P, 2N)
- Beta = Similar to Electron
- Gamma = EM Wave
- Other Types - Cosmic Rays, Neutrons, etc…

Discovery of Radioactivity- 1896



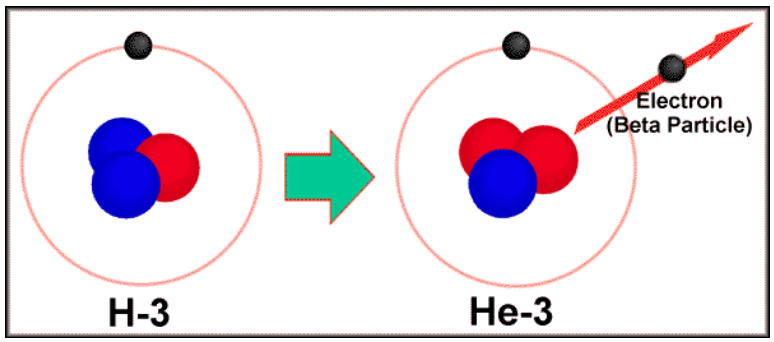
Blackwood. 1970

Alpha Decay



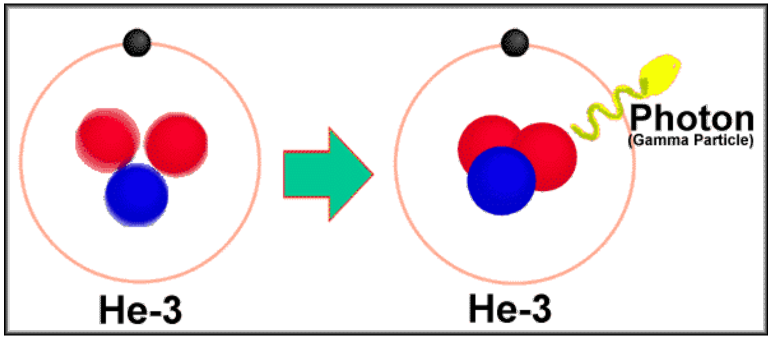
- Nucleus has too many protons which cause excessive repulsion
- Loses 2 atomic# and 4 mass#
- Source of Helium In Uranium Ore

Beta Decay



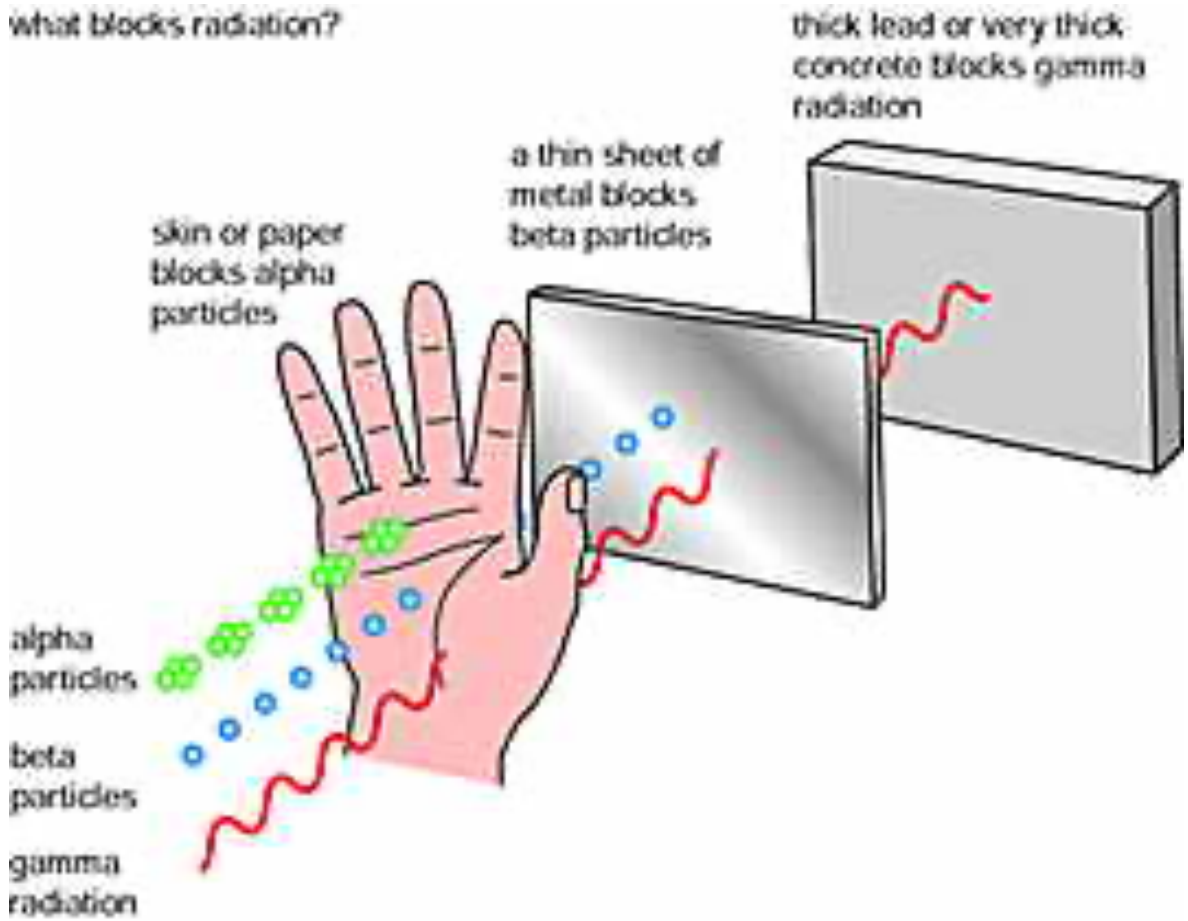
- Neutron to proton ratio is too great in the nucleus and causes instability
- Neutron is turned into a proton and an electron is emitted
- Gains 1 atomic# and mass# stays same

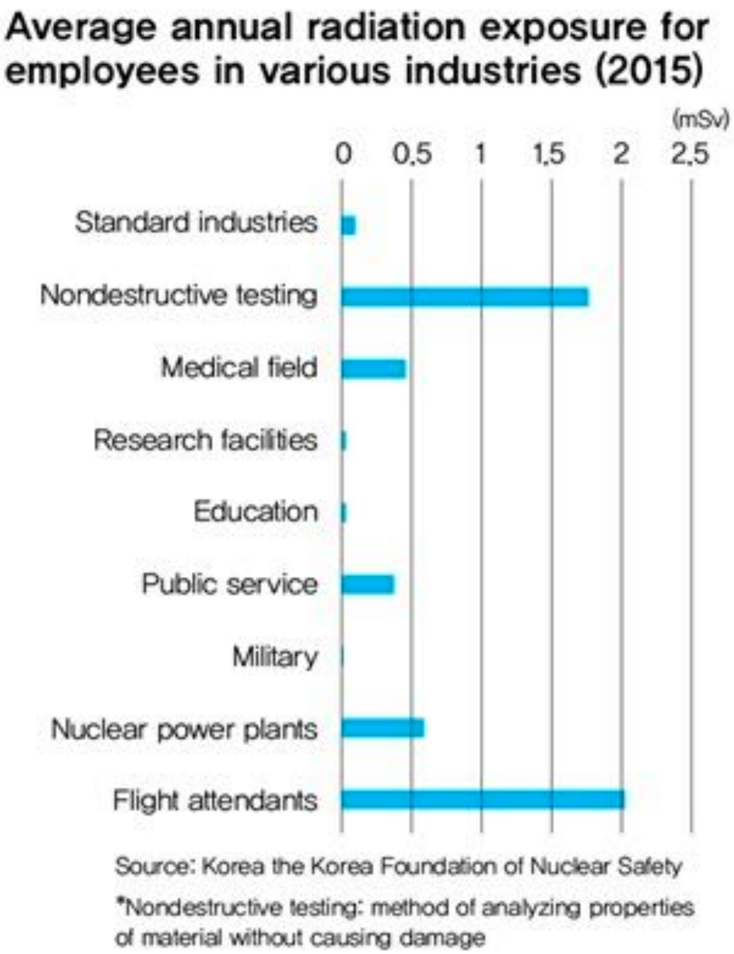
Gamma Decay

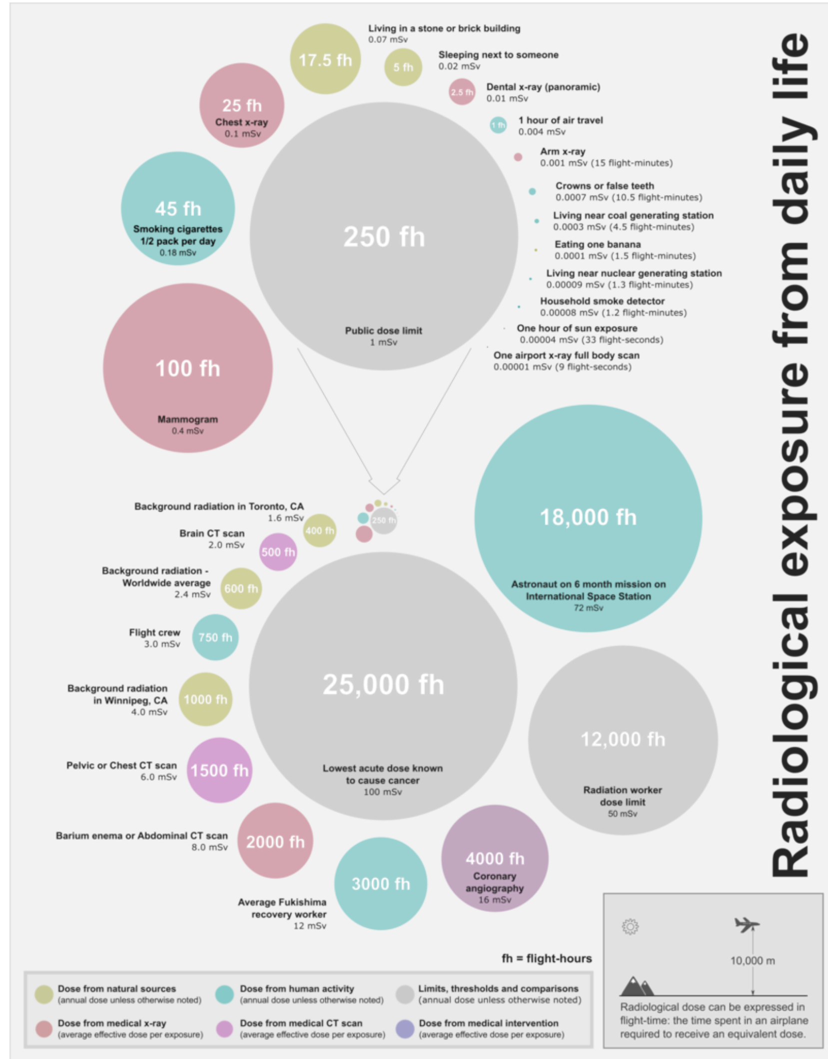


- The nucleus is at too high an energy state. The nucleus falls down to a lower energy state and, in the process, emits a high energy photon.

Shielding


what blocks radiation?
thick lead or very thick concrete blocks gamma radiation
a thin sheet of metal blocks beta particles
skin or paper blocks alpha particles
alpha particles
beta particles
gamma radiation





Stahmer, U. 11 – 16 September 2016. Flight-Time Equivalent Dose - A Concept to Contextualize Radiological Dose. 18th International Symposium of the Packaging and Transport of Radioactive Materials (PATRAM). Kobe, Hyogo, Japan.

and man-made sources such as medical x-rays. According to the National Council on Radiation Protection and Measurements (NCRP), the average annual radiation dose per person in the U.S. is 620 millirem (6.2 millisieverts). The pie chart below shows the sources of this average dose.

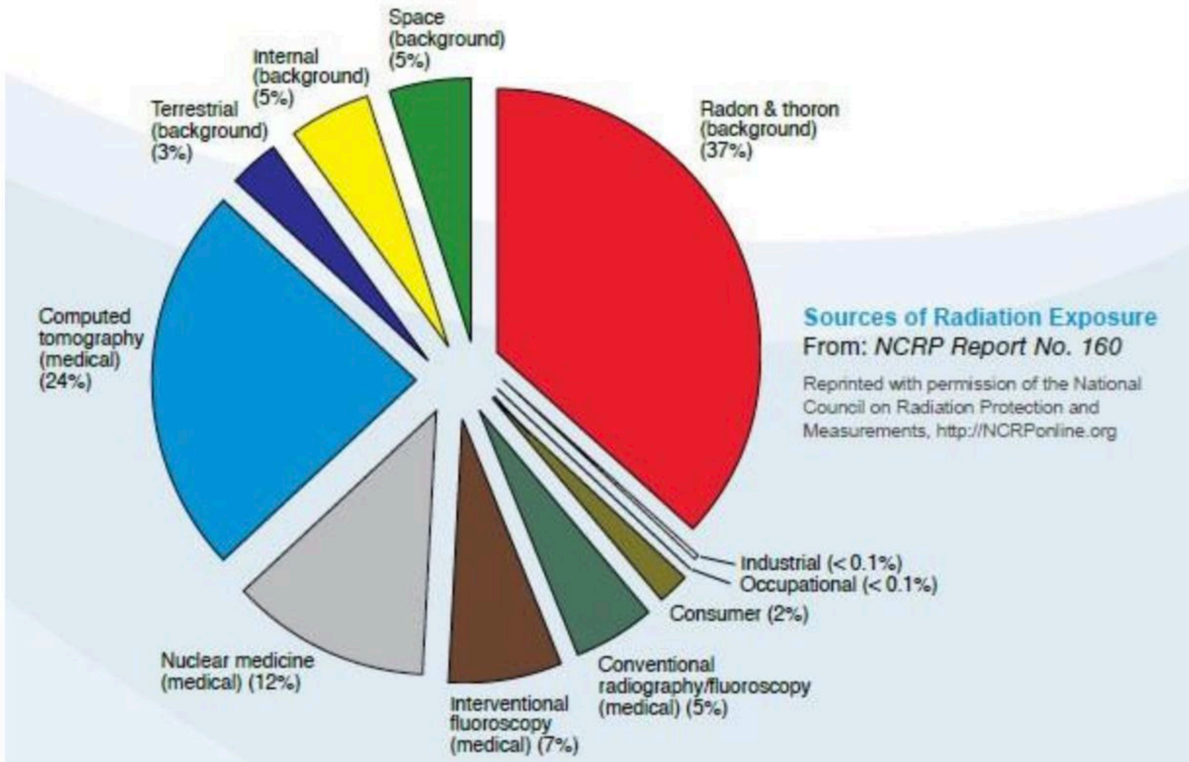


Figure reprinted with permission of the [National Council on Radiation Protection and Measurements](#).

NRC Occupational Dose Limits

Whole Body (TEDE)	5,000 mrem/yr
Any Organ (TODE)	50,000 mrem/yr
Skin (SDE)	50,000 mrem/yr
Extremity (SDE)	50,000 mrem/yr
Lens of Eye (LDE)	15,000 mrem/yr
Embryo/Fetus of DPW	500 mrem/yr
Member of the Public	100 mrem/yr

Note: 1,000 mrem = 1 rem

620 / 5000 = 12.4%

Quantity	Unit	Symbol	Derivation
Activity (A)	becquerel	Bq	s^{-1}
	curie	Ci	$3.7 \times 10^{10}\ s^{-1}$
	rutherford	Rd	$10^6\ s^{-1}$
Exposure (X)	coulomb per kilogram	C/kg	$C \cdot kg^{-1}$ of air
	röntgen	R	esu / 0.001293 g of air
Absorbed dose (D)	gray	Gy	$J \cdot kg^{-1}$
	erg per gram	erg/g	$erg \cdot g^{-1}$
	rad	rad	$100\ erg \cdot g^{-1}$
Equivalent dose (H)	sievert	Sv	$J \cdot kg^{-1} \times W_R$
	röntgen equivalent man	rem	$100\ erg \cdot g^{-1} \times W_R$
Effective dose (E)	sievert	Sv	$J \cdot kg^{-1} \times W_R \times W_T$
	röntgen equivalent man	rem	$100\ erg \cdot g^{-1} \times W_R \times W_T$

The **erg** is a unit of energy equal to 10^{-7} Joules (100 nJ)
$=1\ g \cdot cm^2/s^2$
Joule= $kg \cdot m^2 \cdot s^{-2}$

1. The radiation factor W_R, which is specific for radiation type R – This is used in calculating the equivalent dose H_T which can be for the whole body or for individual organs. 2. The tissue weighting factor W_T, which is specific for tissue type T being irradiated. This is used with W_R to calculate the contributory organ doses to arrive at an effective dose E for non-uniform irradiation.

https://en.wikipedia.org/wiki/Roentgen_equivalent_man

Conversion Equivalence

1 curie	=	3.7×10^{10} disintegrations per second
1 becquerel	=	1 disintegration per second
1 millicurie (mCi)	=	37 megabecquerels (MBq)
1 rad	=	0.01 gray (Gy)
1 rem	=	0.01 sievert (Sv)
1 roentgen (R)	=	0.000258 coulomb/ kilogram (C/kg)
1 megabecquerel (MBq)	=	0.027 millicuries (mCi)
1 gray (Gy)	=	100 rad
1 sievert (Sv)	=	100 rem
1 coulomb/ kilogram (C/kg)	=	3,880 roentgens

= thirty-seven billion dps

The **coulomb** (symbol: **C**) is the unit of electric charge in the International System of Units (SI).[2][3] In the present version of the SI it is equal to the electric charge delivered by a 1 ampere constant current in 1 second and to $\frac{5 \times 10^{27}}{801\,088\,317}$ elementary charges, *e*, (about $6.241\,509 \times 10^{18}$ *e*).[3][2]

Radioactive Material Regulations

C.F.R. 40.13
Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the act to the extent that such person receives, possesses, uses, or transfers unrefined and unprocessed ore containing source material; provided, that, except as authorized in a specific license, such person shall not refine or process such ore.

Sealed Source Exemption: 10 CFR 30.71 Schedule B
~100 Microcuries (Gamma Emitters)
~10 Microcuries (Alpha Emitters)

Also Exempt: Radium Dial Clocks, Fiestaware, Lamp Mantles, Smoke Detectors, Tritium Gunsights, Vacuum Tubes, etc..

Source: Code of Federal Regulations

Major Uranium Minerals

- Carnotite - $K_2(UO_2)2V_2O_8 \cdot 3(H_2O)$
- Tyuyamunite - $Ca(UO_2)\ _2V_2O_8 \cdot 5\text{-}8(H_2O)$
- Uraninite - combined UO_2 and UO_3

Minor Uranium Minerals

- Autunite - $Ca(UO_2)_2(PO_4)_2 \cdot 10\text{-}12(H_2O)$
- Torbernite - $Cu(UO_2)_2(PO_4)_2 \cdot 10(H_2O)$
- Uranophane - $Ca(UO_2)_2Si_2O_7 \cdot 6(H_2O)$

Where is Uranium Found?

Geologic Environments of Major Deposits:

1. Hydrothermal Veins found in Igneous & Metamorphic Rocks
a. Vein Type (Major Production)
b. Pegmatites (Minor Production- Rare Earth Byproduct)

2. Flat Lying Deposits in Sedimentary Rocks
a. Secondary Minerals- Carnotite Type (Major Production)
b. Uraninite in Sandstone (Major Production)
c. Copper-Uranium (Minor Production)
d. Phosphates (Byproduct)
e. Shales, Lignites, Coals (Not Economic at Present)

3 Placer Deposits - Witwatersrand, South Africa
(Gold byproduct)

Hydrothermal Vein Deposits

1) Host Rocks are Usually Felsic Igneous or Metamorphic Rocks

2) Strong Relationship Between Uranium and Granitic or Alkalic Rocks

Granite : Q (quartz) between 20% and 60%

P/A+P (P=plagioclase feldspar , A=alkali feldspar) between 10% and 65%

Alkaline Rocks are Rich in Sodium and Potassium

3) Uranium Occurs in Open-Space Filling of Fractures (Stockworks)

4) Uraninite Occurs with Pyrite, Base Metals, Quartz, Hematite, Calcite

Hydrothermal Mineral Assemblage

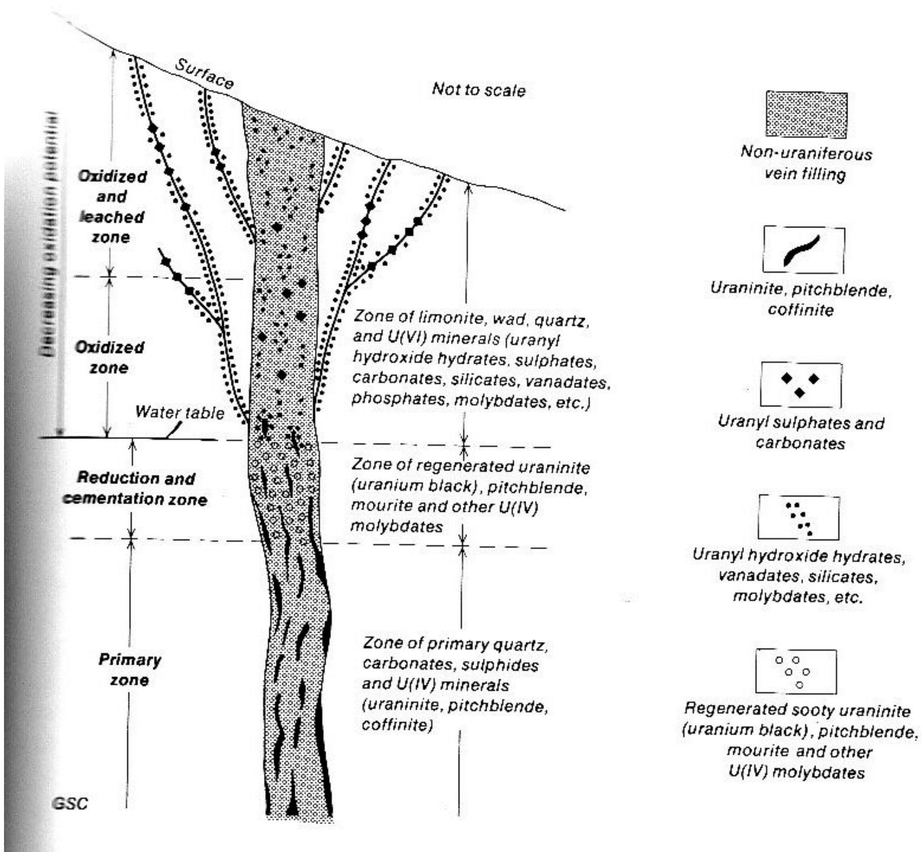


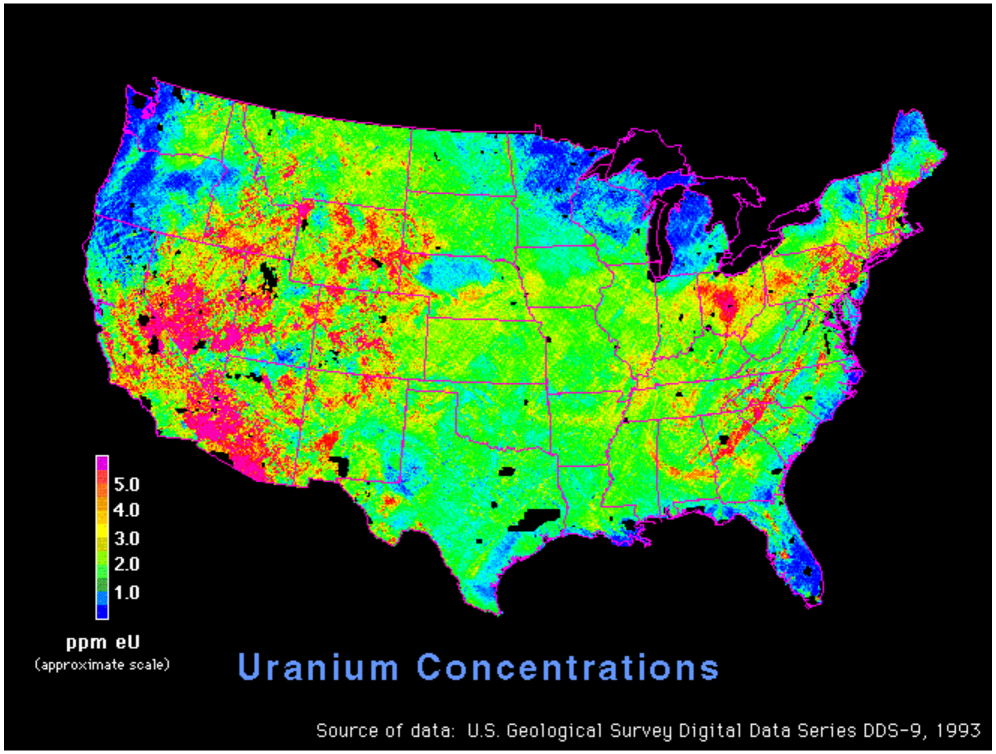
Fig. 15. Idealized diagrammatic section showing the distribution of the various zones and mineral assemblages resulting from the supergene alteration of uraniferous vein deposits.

Boyle, p.109

Conditions Necessary for formation of Uranium/Thorium Deposits

1. Source Rock
2. Host Rock
3. Physical/Chemical Trap

DDS-31



Profiles of gamma-ray and magnetic data from aerial surveys over the conterminous United States Data Series 31

Uranium Tour 2023 Localities

1. Foster Prospect, Cumberland, RI
2. Biermann Quarry, CT
3. Bear Mtn Park, NY
4. Philips Mine, NY
5.Thomaston Dam, CT
6. CCC Quarry, CT
7. John Salak Quarry, CT
8. Case Quarry, CT
9. Simpson Quarry CT
10. White Rock Quarry CT
11. Narragansett Pier, RI
12. Consolidated Quarries, ME
13. Mt. Apatite, ME
14. CK Williams Quarry, PA
15. Jim Thorpe PA (Penn Haven Junction)
16. BEMCO Mine, NJ
17. North Hill Mines, CT
18. Harvard Quarry, Greenwood ME
19. Swamp Quarries, Topsham ME
20. Ohman Mine, Golden CO
21. Ascension Mine, Golden CO
22. Little Warrior Mine, CO
23. Buckman Mine, Golden CO
24. Slick Rock (Gypsum Valley Area) Mine Complex, CO
25. Blue Streak Mine, Montrose County, CO
26. Two Sisters Mine, Central City CO
27. 4700 Kaw Drive Frontage Road, Kansas City, KS
28. Tripp Mines, Alstead NH
29. Parker Mtn Mine, Strafford NH
30. Redstone Quarry, Westerly RI
31. 290&495 Roadcut, Marlborough MA
32. Palermo Mine, Groton NH
33. FL Phosphate Mining Museum, Mulberry FL
34. Am. Cyanamid Mine (Menard Park), FL
35. Punta Gorda Radioactive Fountain, FL

Newgate Copper Mine, East Granby CT

North Hill Mines/Newgate

Located in the central and northern Connecticut portion of the Hartford Basin

Strata-bound occurrences of early diagenetic copper sulfides in gray sandstones.

Copper was first discovered in the Newgate Prison area in 1705. Two years later the first mining company in America was organized to work the deposits

By 1741, when all operations ceased, more than $200,000 had been spent to recover little more than 100 tons of ore which averaged 12% Cu (Richardson, 1928).

Water was one of the most difficult problems faced by the early miners. Between 1721 and 1730 a 100 meter tunnel was driven to drain one of the principal deposits. These workings were subsequently used as the State Prison from 1773 to 1827.

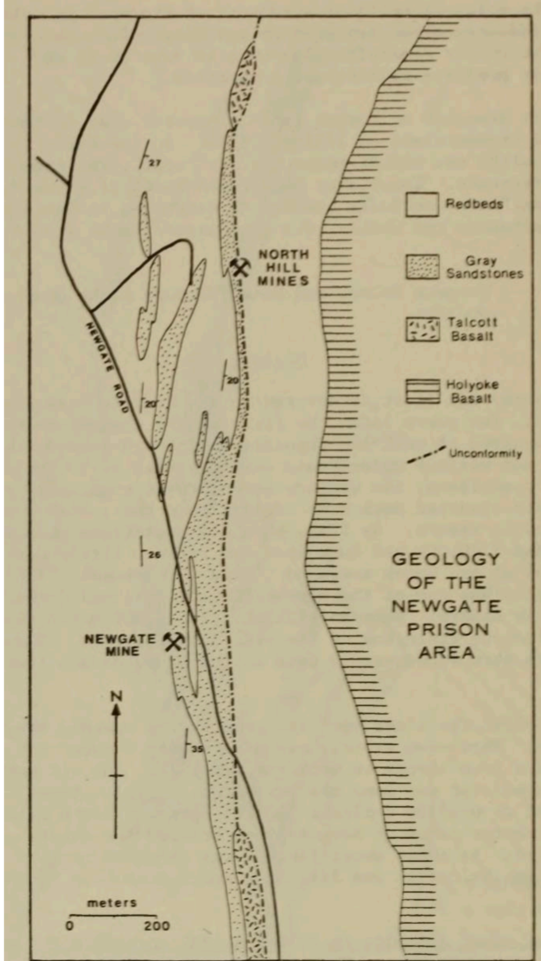


Figure 2. Generalized geology of the Newgate Prison area. Adapted from Perrin (1976).

Gray sandstones lying less than 20 meters below the unconformity are the most heavily mineralized. Copper averages less than 1% in most of the Cu bearing gray beds, but in the vicinity of the North Hill mines, the average is somewhat higher (2-5%).

The main deposit at Newgate Prison is stratigraphically lower and texturally distinct from the widespread disseminated mineralization. It also is higher grade.
Copper averages between 2.5 .to 10%, and silver up to 10 oz/ton.
The ore occurs in a peculiar 2 meter thick arkosic sandstone Mineralization
In Fine-Grained Yellowish Sandstone Bed of Mesozoic Lower Shuttle Meadow
Formation (252 to 66 million years ago)

Small amounts of uranium are associated with the disseminated copper mineralization especially at the North Hill Mines. The mottled chalcocite ore at Newgate is distinctly less radioactive.

Copper Occurrences in the Hartford Basin of Northern Connecticut
Norman H. Gray
Department of Geology and Geophysics University of Connecticut, Storrs, CT.

Perrin, J., 1976, Geology of the Newgate Prison Mine, East Granby, Connecticut [M.S. thesis] University of Connecticut, Storrs, CT.

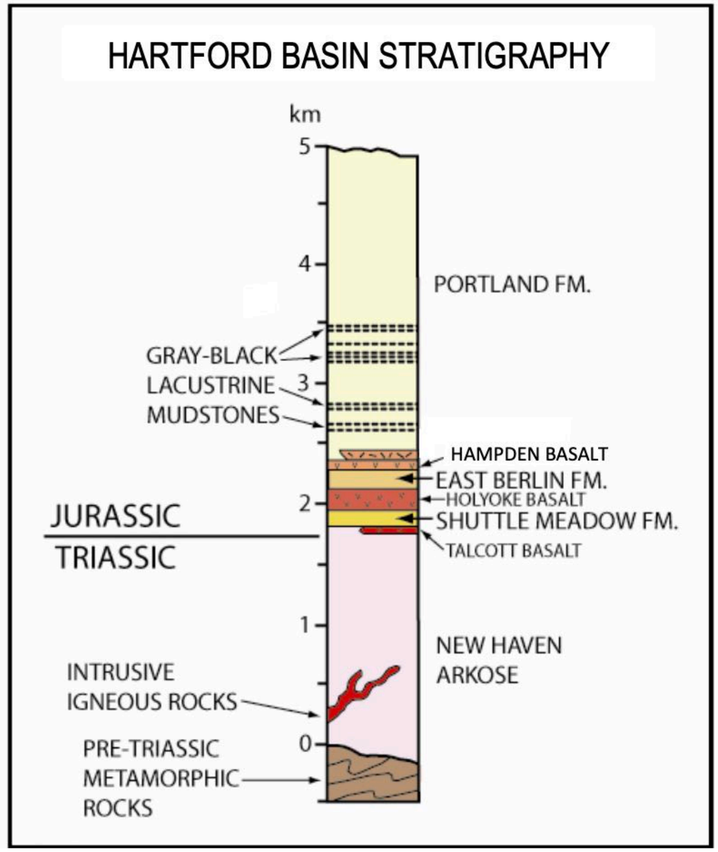
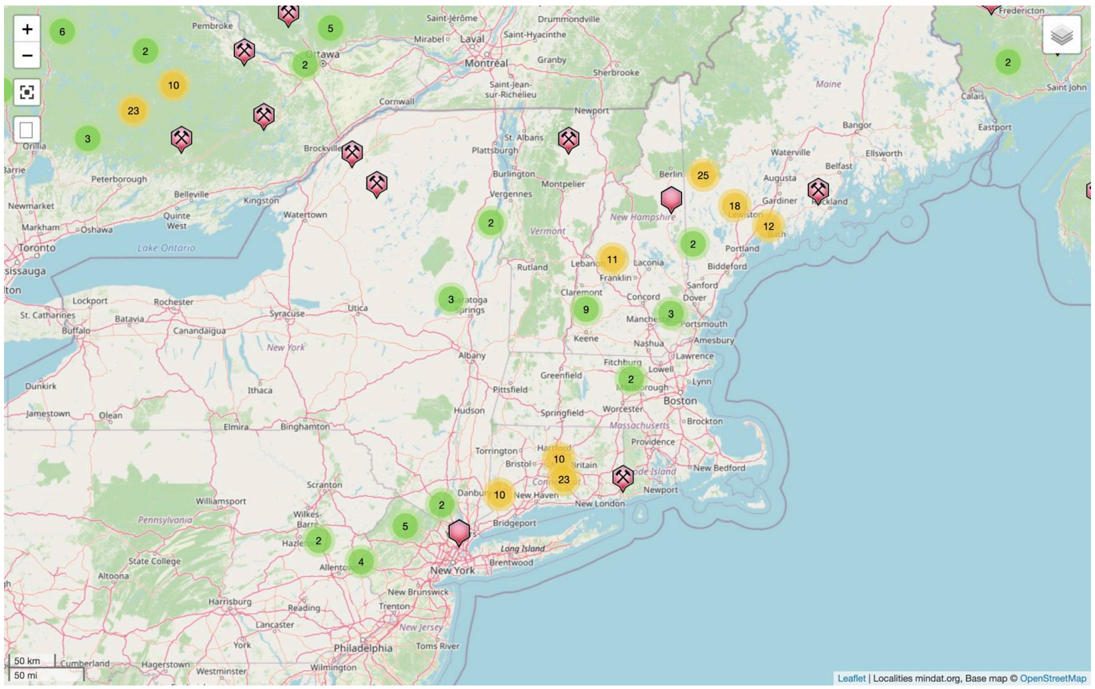


Figure 4. Stratigraphic column of the Hartford Basin, showing the vertical stratigraphic positions, relative thicknesses, and ages of the various sedimentary and volcanic formations (modified from Hubert et al. 1992).

STATE GEOLOGICAL AND NATURAL HISTORY SURVEY OF CONNECTICUT
Department of Energy and Environmental Protection
2012 QUADRANGLE REPORT NO. 40

Uraninite Deposits



mindat.org

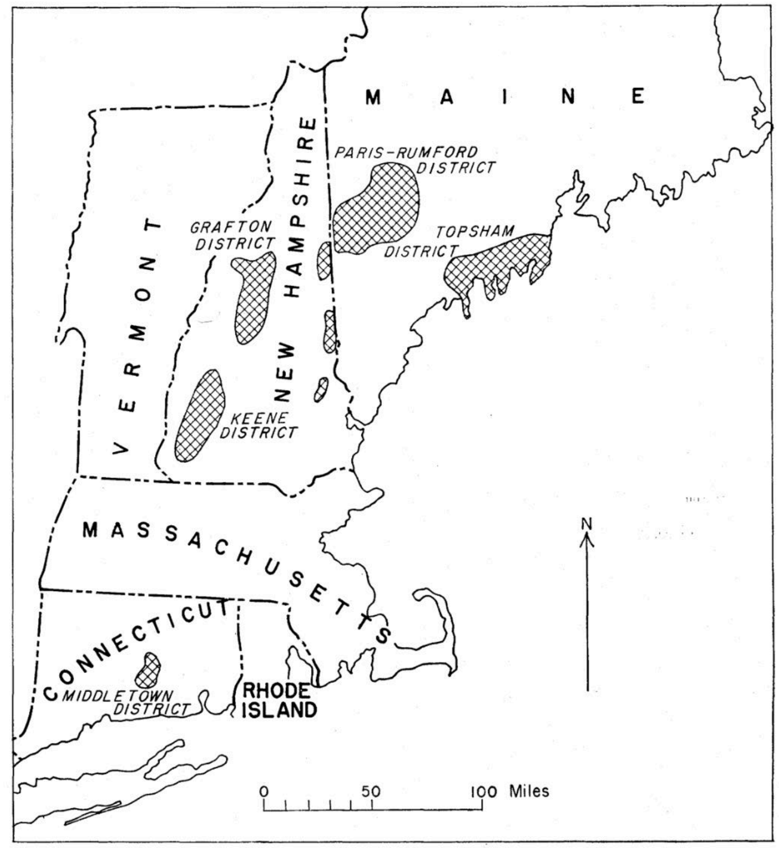


FIGURE 1.—Index map showing principal pegmatite districts of Maine, New Hampshire, and Connecticut.

USGS PP 255

The Majority of uraninite deposits in Northeast USA are in **pegmatites**

(1) Topsham district, Maine (Swamp Quarry)
(2) Paris-Rumford district, Maine (Harvard Quarry)
(3) Grafton district, New Hampshire (Palermo)
(4) Keene district, New Hampshire (Tripp and Clark)
(5) Middletown District, CT (Simpson)

Size Range: A few feet long and a few inches thick to those more than a mile long and hundreds of feet thick. Most bodies are less than 1,000 feet long and less than 100 feet thick.

The districts in which the pegmatites occur are underlain by metamorphic rocks, derived chiefly from Paleozoic sediments that have been metamorphosed as the result of folding and of repeated intrusion by igneous rocks.

Quartz-mica schist is the most abundant rock type. The most widespread igneous rocks are granodiorites, quartz monzonites, and granites that form stocks, domes, sheets, and dikes, and have been intruded into the metamorphic rocks.

Source: USGS PP 255

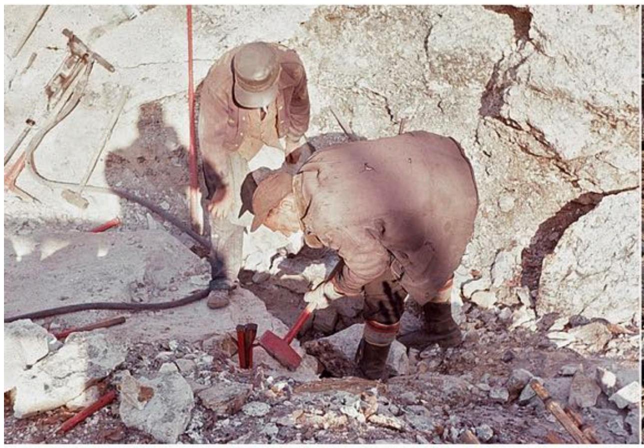
TABLE 9.—*Age determinations of pegmatites by the lead method, Middletown, Conn.*

Locality	Mineral analyzed and source of reference	Class of analysis	Latest calculation of age in millions of years to nearest 10, and source of reference	Corresponding geologic age
Pegmatite 3, Spinelli prospect, Glastonbury.	Samarskite, Wells,[1] Nier.[2] Baxter.[3]	I and II	260, Holmes [4]	Early to middle Carboniferous.
Pegmatite 91, Andrews quarry (formerly called Hale quarry), Portland.	Uraninite, Foye and Lane.[5]	III and IV	280, Foye and Lane.[5]	Do.
Pegmatite 91, Andrews quarry, Portland.	Monazite, Fenner [6]	III	300, Knopf [7]	Do.
Pegmatite 117, Strickland quarry, Portland.	Uraninite, Foye and Lane.[5]	IV	280, Foye and Lane.[5]	Do.
Pegmatite 384, Rock Landing quarry, Haddam.	Uraninite, Ingerson [8]	IV	280, Knopf [7]	Do.

[1] Wells, R. C., 1937, p. 114–115.
[2] Nier, A. O., 1941, p. 113.
[3] Baxter, G. P., and others, 1937, p. 702–705.
[4] Holmes, Arthur, 1946, p. 134–137.
[5] Foye, W. G., and Lane, A. C., 1934, p. 127–138.
[6] Fenner, C. N., 1932, p. 327–333.
[7] Knopf, Adolph, oral communication, 1949.
[8] Ingerson, Earl, 1938, p. 269–276.

Source: USGS Bulletin 1042

Hewitt Gem Quarry, Haddam CT



Herb and John collecting in the main pit

Hewitt Gem Quarry, Haddam, Middlesex County, Connecticut, USA

Herb and John drilling

Hewitt Gem Quarry, Haddam, Middlesex County, Connecticut, USA

Herb Hewitt in the Main pit

Hewitt Gem Quarry, Haddam, Middlesex County, Connecticut, USA

ⓘ Beryllium	ⓘ Caesium	ⓘ Gemstones	ⓘ Zircon
ⓘ Bismuth	ⓘ Coltan (Columbite-Tantalite)	ⓘ Uranium	

Simpson Quarry, Glastonbury CT

The pegmatites cut the metasediments of the Bolton schist of pre-Mississippian(?) age and, in ascending order of sequence, mafic gneisses, the Glastonbury granite gneiss, Maromas granite gneiss, and Monson gneiss. .The pegmatites are composed essentially of perthite, quartz, plagioclase, and muscovite. The common accessories are tourmaline, beryl, garnet, and biotite.

Source: USGS Bulletin 1042

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Biermann Quarries (Bethel quarries) and tourmaline ledge, Bethel, Fairfield County, Connecticut, USA

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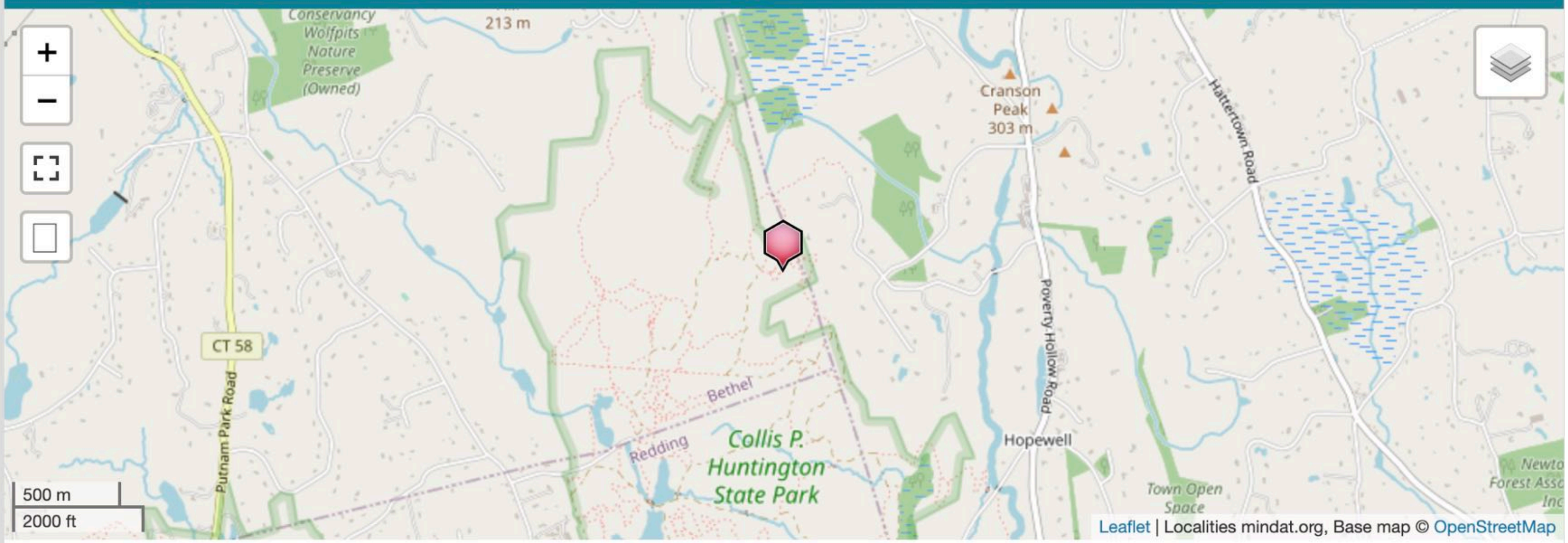

Meta-autunite	Uranophane
Uraninite	

24 valid minerals. 1 erroneous literature entry.

Biermann Quarry

Swamp Quarries – Topsham ME

Crystallization ages of monazites from peraluminous granites and granitic pegmatites in southwestern Maine constrain the timing of final ductile motion of a major shear zone to approx 280 Ma. U-Pb monazite ages of granite at Brunswick (278 +/- 2 Ma and evolved granitic pegmatites in Topsham (275-269 Ma)

U-Pb Monazite Geochronology of Granitic Rocks from Maine

Paul B. Tomascak, Eirik J. Krogstad and Richard J. Walker

The Journal of Geology Vol. 104, No. 2 (Mar., 1996),

THE Arkenstone

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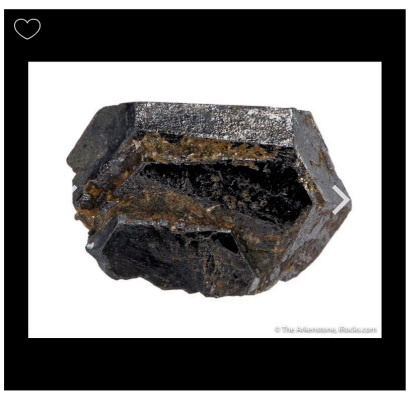
https://idp.godaddy.com/login.aspx?SPKey=G...



JWL19-34

Uraninite

Swamp No. 1 Quarry, Topsham, Sagadahoc Co., Maine, USA

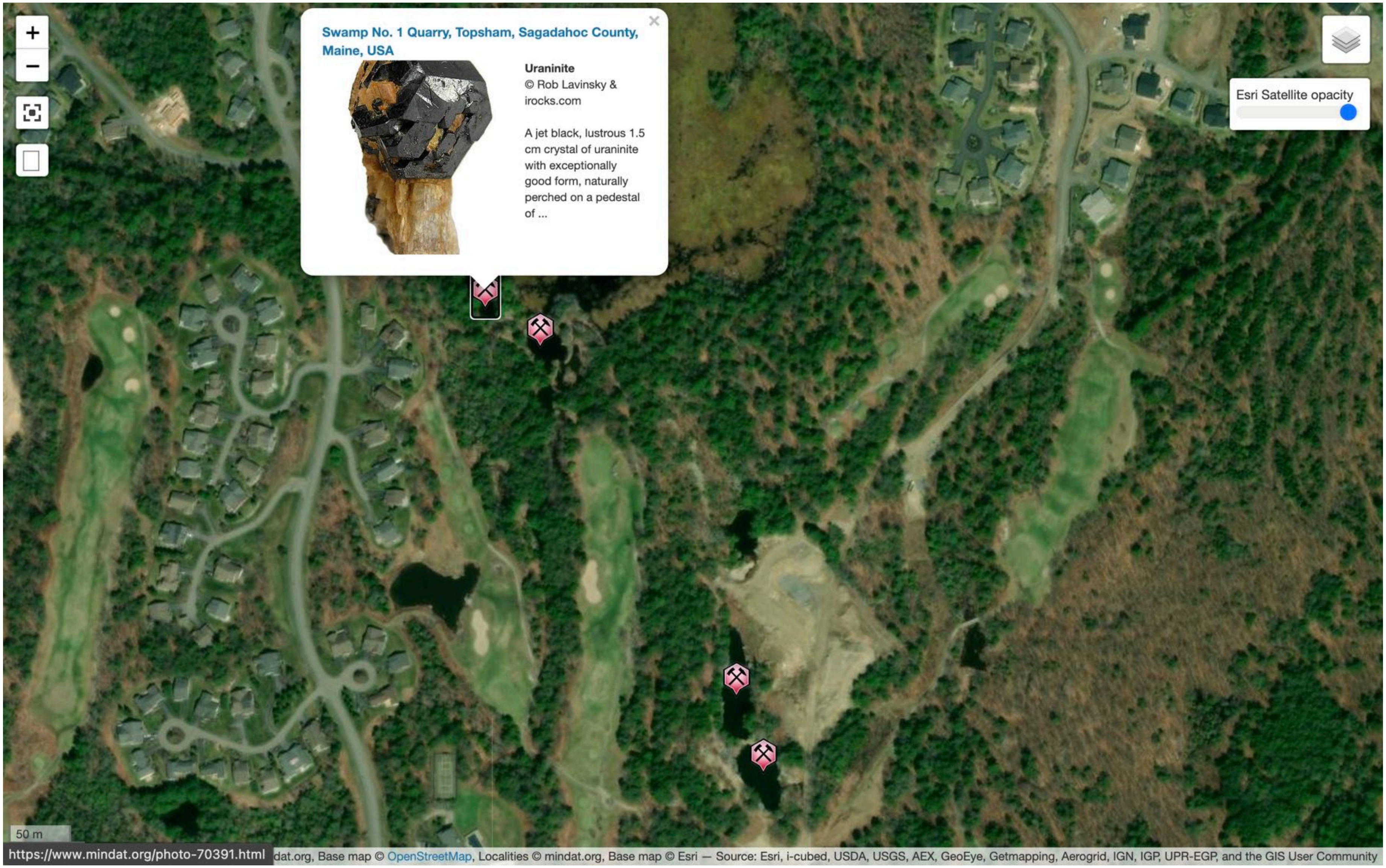
Thumbnail, 2.0 x 1.2 x 0.8 cm

Ex. Charlie Key

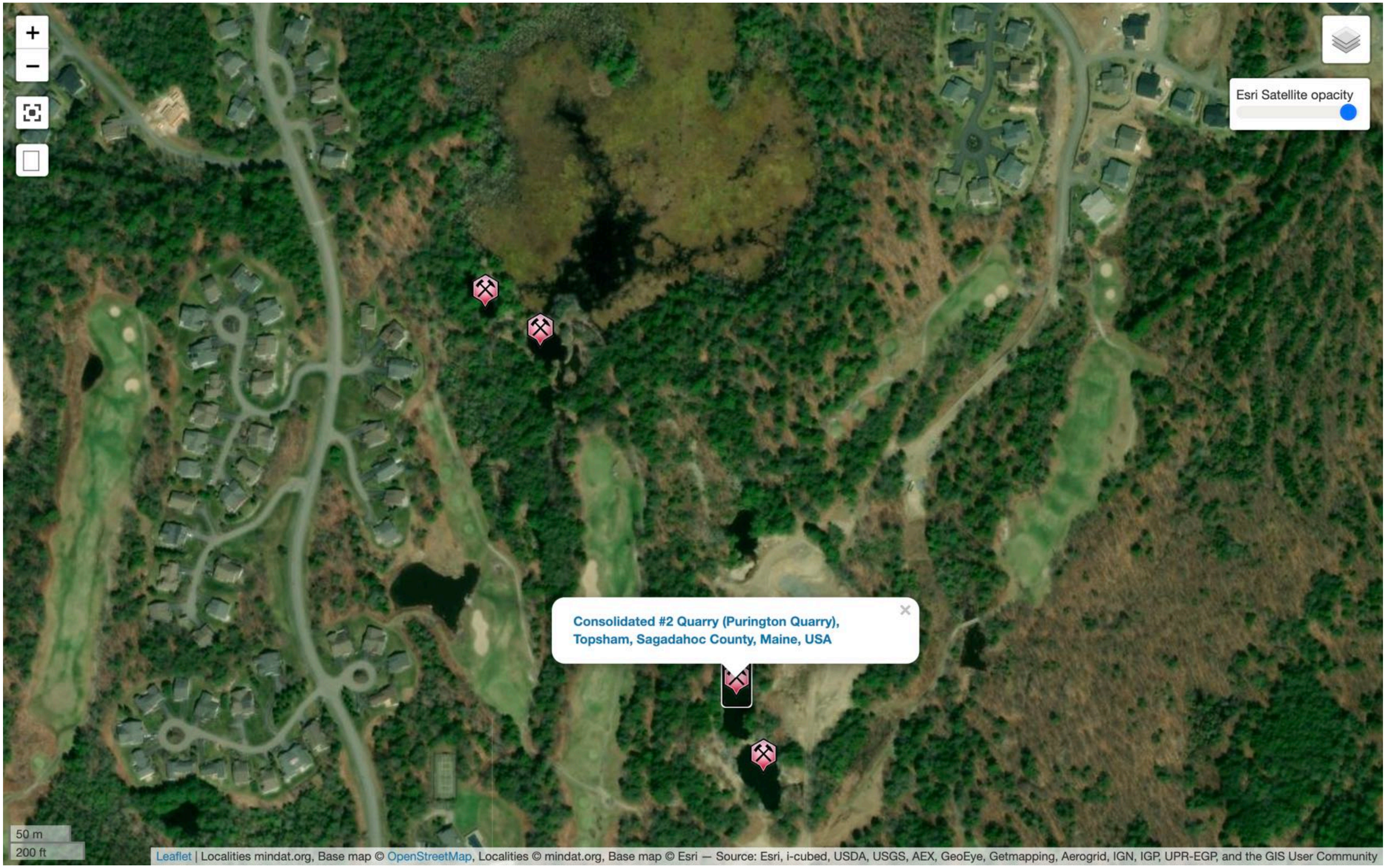
$1,800.00 Payment Plan Available

Order Now

The granite pegmatites at Topsham have produced sor
Uraninite crystals known, although certainly not the larg
crystal, contacted along the bottom, is a tabular, heavily
cuboctahedron with good sub-metallic luster and browi
The Uraninites were discovered by Cliff Trebilcock, Jr. a
the deposits have have been re-mined since then. This



+
−
Swamp No. 1 Quarry, Topsham, Sagadahoc County, Maine, USA
Uraninite
© Rob Lavinsky & irocks.com
A jet black, lustrous 1.5 cm crystal of uraninite with exceptionally good form, naturally perched on a pedestal of ...
Esri Satellite opacity
50 m
https://www.mindat.org/photo-70391.html
dat.org, Base map © OpenStreetMap, Localities © mindat.org, Base map © Esri — Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Community



Esri Satellite opacity
Consolidated #2 Quarry (Purington Quarry),
Topsham, Sagadahoc County, Maine, USA
50 m
200 ft
Leaflet | Localities mindat.org, Base map © OpenStreetMap, Localities © mindat.org, Base map © Esri — Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Community

Public Collecting Areas in Maine

Harvard Quarry, Greenwood ME
(Paris-Rumford District)

Mt. Apatite, Auburn ME

Autunite, Meta-Autunite, Metatorbernite, Torbernite, Uraninite

Photo by Kevin Downey

Palermo's eyes watch all who enter

The Pegmatite Mines Known as PALERMO. **Robert W. Whitmore**. 2004, ISBN: 0974061344

Palermo Mine (Grafton District)

The area is underlain chiefly by quartz-mica schist, quartz-mica-sillimanite schist, micaceous quartzite, and amphibolite of the Littleton formation. The principal minerals in the smaller, finer-grained pegmatites are quartz, sodic plagioclase, and muscovite, commonly accompanied by black tourmaline and garnet. In the larger and coarser-grained pegmatites perthite and biotite are also present. Small quantities of beryl, triphylite, graftonite and related phosphates, apatite, chalcopyrite, pyrite, and sphalerite occur in several of the larger pegmatites.

- Autunite
- *Clarkeite ?*
- Compreignacite
- Meta-autunite
- Metatorbernite
- Parauranophane
- Paulscherrerite
- Phosphuranylite
- Rutherfordine
- Schoepite
- Torbernite
- Uraninite
- Uranophane
- Vandendriesscheite

159 valid minerals. 15 **(TL)** - type locality of valid minerals. 1 **(FRL)** - first recorded locality of unapproved mineral/variety/etc. 5 erroneous literature entries.

Index to minerals


Phosphophyllite p. 152


Phosphophyllite p. 152

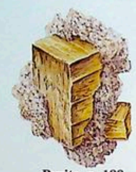

Phosphophyllite p. 152


Phosphosiderite p. 153


Pseudolaueite p. 154


Pseudolaueite p. 154


Pseudomalachite p. 155


Pyrite p. 188


Pyrite p. 188


Quartz p. 189


Quartz p. 189


Rhodochrosite p. 190


Rockbridgeite p. 156


Rockbridgeite p. 156


Samuelsonite p. 157


Schoonerite p. 158


Schoonerite p. 158


Schorl p. 191


Scorzalite p. 159


Siderite p. 192

Index to minerals


Siderite p. 192


Sinkankasite p. 160


Sphalerite p. 193


Stewartite p. 161


Stewartite p. 161


Strengite p. 162


Strunzite p. 163


Strunzite p. 163


Torbernite p. 164


Triphylite p. 109, 165


Triphylite p. 109, 165


Uraninite p. 194


Uraninite p. 194


Ushkovite p. 166


Vivianite p. 167


Vivianite p. 167


Wardite p. 168


Whiteite p. 169


Whiteite p. 169


Whitlockite p. 170

The Pegmatite Mines Known as PALERMO. **Robert W. Whitmore**. 2004, ISBN: 0974061344

Philips Mine – Philipstown NY

Uraninite occurs in hornblende pegmatite and in adjacent hornblende gneiss and diorite in an elongate zone that is mineralized with magnetite and iron sulfides.

Bear Mountain State Park

Penn Haven Junction – Jim Thorpe, PA

BEMCO Mine – Cranberry Lake NJ

Calumet (Catamint) Hill – Cumberland RI

Other nearby sites

A large number of minerals have been found in the townships of Cumberland and Lincoln. Miller (1971) lists 140 and 84 reported minerals and varieties respectively from these two towns. Some of the more unusual finds include astrophyllite, sagenetic quartz, molybdenite and cecilite (an ore of uranium, thorium, rare earths and noble metals).

Reference: SELECTED MINERAL COLLECTING SITES IN NORTHEASTERN **RHODE ISLAND**. * by. 1. 2. Ralph L. **Carr** and John 0. Edwards.

Quartz, basanite *La, Qi*
Quartz, opal *La, Qi*
Rhodochrosite *La*
Riebeckite *La, Qi, in Quincy granite*
Rutile *La, Qi*

Quartz, opal *La, Qi*
Quartz, Thetis hairstone
Riebeckite *Qi, La, in Quincy granite*
Tantalite *Qi, in Quincy granite*
Thorium minerals *Qi, in Quincy granite*

#40 (p.36)

#41 (p.37)

with Tantalite, Columbite
Uranium minerals *Qi, Thorium,*[18] *Miller, 1959*

Quartz, opal *La, Qf, Qi,*
Quartz, prase *La, Qf, Qi*
Quartz, sagenite *La, Qf, Qi*

XRF Analysis of Cecilite (ppm)

Ti	Fe	Cu	Zn	As	Pb	Zr	U
2487	36371	81	587	3038	2914	1775	169

[17] *This hill, slightly to the north of due west from Diamond Hill, is another example of a hill with many names. However, an old 1838 map of the Town of Cumberland gives the hill the name "Catamint." The author believes this gives priority to that name over "Calumet," the name often given by mineral collectors to the same hill. In this hill is located the old Diamond Hill Granite Company's quarry, in which minerals may still be collected.*

[18] *Geiger-counter indicated high radioactivity, but analysis showed thorium.*

Title:	Rhode Island minerals and their locations
Author:	Miller, Clarence E.
Author:	Hermes, O. Don
Note:	Dept. of Geology, University of Rhode Island, 1971

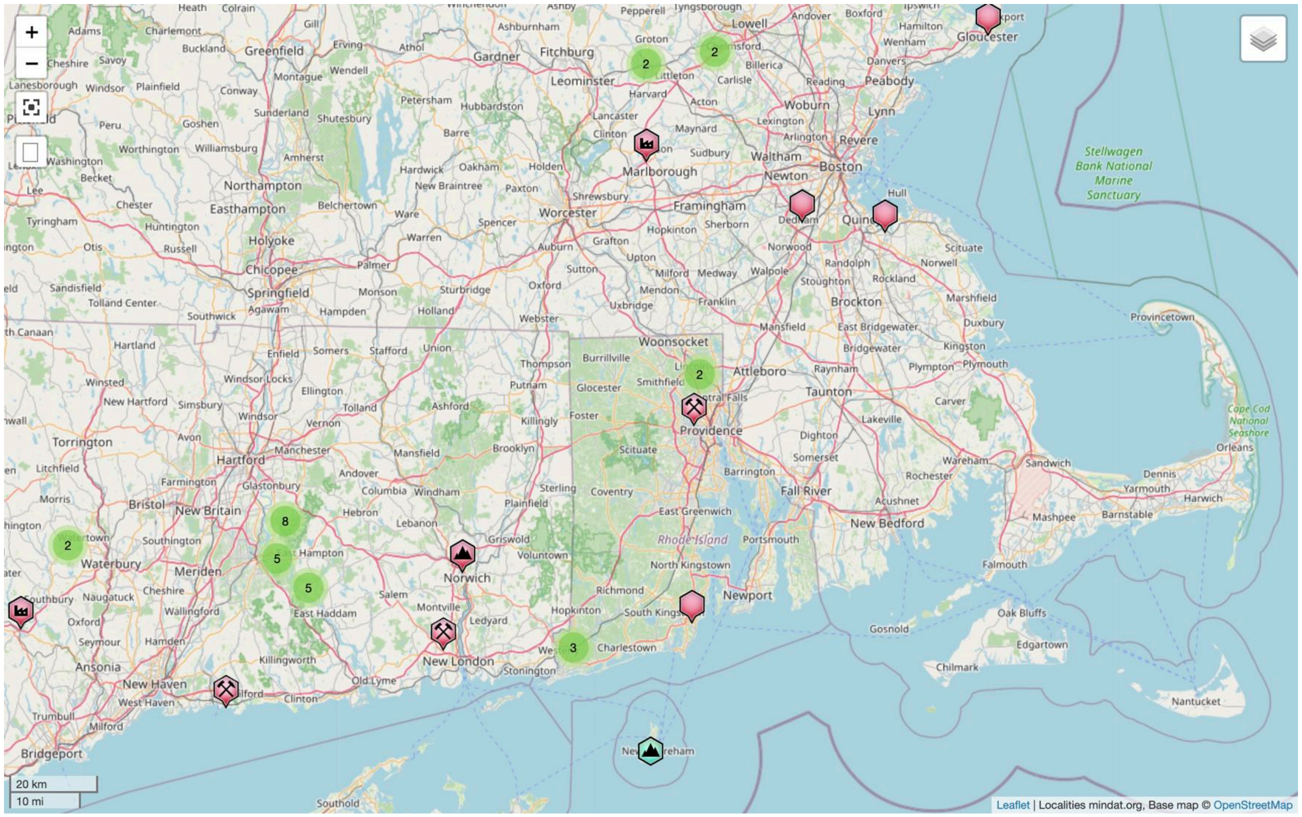
Monazite

Chemical Formula:	(Ce,La,Nd,Th)PO4
Composition:	Molecular Weight = 240.21 gm

Lanthanum	14.46 %	La	16.95 %	La_2O_3
Cerium	29.17 %	Ce	34.16 %	Ce_2O_3
Thorium	4.83 %	Th	5.50 %	ThO_2
Phosphorus	12.89 %	P	29.55 %	P_2O_5
Neodymium	12.01 %	Nd	14.01 %	Nd_2O_3
Oxygen	26.64 %	O		
	100.00 %		100.17 %	= TOTAL OXIDE

Empirical Formula:	$Ce_{0.5}La_{0.25}Nd_{0.2}Th_{0.05}(PO_4)$
Environment:	Granitic pegmatites.
IMA Status:	Valid Species (Pre-IMA) 1829
Locality:	Mars Hill, Madison County, North Carolina. Link to MinDat.org Location Data.
Name Origin:	From the Greek monazeis - "to be alone" in allusion to its isolated crystals and their rarity when first found.
Name Pronunciation:	Monazite-(Ce)
Synonym:	Cheralite-(Ce) ICSD 79746 PDF 32-199

Rhode Island Monazite Occurrences (mindat.org)



1. Poker Hill, Lincoln
2. Manton Ave, Providence
3. Conklin Quarry, Lincoln
4. Narragansett Pier
5. Sullivan Quarry, Bradford
6. Redstone Quarry, Westerly
7. Smith Quarry, Westerly
8. Block Island

As early as 1891 the granites exposed around Westerly and Narragallsett Pier, Washington County, were shown by Derby (1891a, p. 205; AM. Naturalist, 1892) to be monazite bearing.

The rock at Westerly was said to be especially rich in monazite. Later reports by Kemp (1899, p. 368), Loughlin (1912, p. 127) and Quinn, Jaffe Smith, and Waring (1957, p. 549) repeated Derby's observation and extended the known presence of monazite in the rocks of the Narragansett Bay area to scattered occurrences in pegmatite dikes that cut across the granite at Westerly.

Monazite was reported to occur in granite exposed at the Redstone quarry near Westerly in the Ashaway quadrangle (Jaffe and others, 1959, p. 102). At this locality the monazite is accompanied by bastnaesite and uranoan thorianite, but allanite is absent.

Beach sand on the south shore of Block Island, Newport County, in the vicinity of New Shoreham was reported to contain accessory detrital monazite, sillimanite, and zircon (Fisher and Doll, 1927, p. 433). Monazite is present in sedimentary deposits on the Continental Shelf in the Atlantic from Block Island to the 100-fathom line (Alexander, A. E., 1934, p. 13).

Alexander, A. E., 1934, A petrographic and petrologic study of some continental shelf sediments: Jour. Sed. Petrology, v. 4, no. 1, p. 12-22.